

1. A reagent container capable of use in an autostainer
having a probe, the container comprising:
 - an upper wall, a base wall, and a tubular side wall interconnecting
the base and upper walls, said upper wall spaced apart from said base wall
5 along an imaginary line passing through the base and upper walls, said base
wall having a nadir and said upper wall having an access opening, said nadir
and access opening being aligned with each other along said imaginary line so
that the probe entering said opening in a direction substantially parallel to said
imaginary line is directed toward said nadir.

2. The reagent container of claim 1 wherein said upper wall includes a neck having a passageway extending substantially parallel to said imaginary line, said access opening being formed in said neck and being substantially coextensive with the cross-sectional area of said passageway.

3. The reagent container of claim 2 further comprising a removable closure capable of engaging said neck and thereby sealing said access opening.

4. The reagent container of claim 1 further comprising a two-dimensional data storage element containing reagent data that is readable by the autostainer.

5. The reagent container of claim 4 wherein said two-dimensional data storage element includes a two-dimensional array of optically readable marks.

6. The reagent container of claim 4 wherein said data storage element is a two-dimensional bar code.

7. The reagent container of claim 1 wherein said base wall includes a spaced-apart pair of outwardly-projecting protrusions, said protrusions each providing a contact point when the reagent container is placed on a planar surface.

8. An automated staining apparatus for staining specimens carried on a plurality of slides, comprising:

a tray for holding the plurality of slides each carrying a tissue specimen;

5 a rack having a plurality of apertures;

a plurality of reagent containers received in said plurality of apertures, each of said reagent containers containing a reagent and including an upper wall, a base wall, and a tubular side wall interconnecting the base and upper walls, said upper wall spaced apart from said base wall along an

10 imaginary line passing through the base and upper walls, said base wall having a concave well with a nadir and said upper wall having an access opening, said nadir and access opening being aligned with each other along said imaginary line; and

a staining head assembly having a selectively and controllably
15 movable probe capable of being positioned proximate selected ones of said reagent containers and entering said access openings in a direction substantially parallel to said imaginary line and directed toward said nadir, said probe operable for withdrawing a reagent volume from said reagent containers and depositing the reagent volume on the slides according to a staining
20 protocol.

9. The apparatus of claim 8 wherein said upper wall includes a neck having a passageway extending parallel to said line, said access opening being provided in said neck and coextensive with said passageway.

10. The apparatus of claim 9 further comprising a removable closure capable of engaging said neck and thereby sealing said access opening.

11. The apparatus of claim 8 further comprising:

a data reader mounted for movement with said staining head assembly;

and

a plurality of two-dimensional data storage elements each associated

5 with one of said reagent container, said data storage element containing reagent data that is readable by said data reader when said probe is located at the reagent container containing the data storage element.

12. The apparatus of claim 11 wherein said two-dimensional data storage element includes an array of optically readable marks, and wherein said data reader is an optical reader

13. The apparatus of claim 11 wherein said data storage element is a two-dimensional bar code and said data reader is a bar code reader.

[illegible]

15. An apparatus for staining specimens carried on a plurality of slides, comprising:

a tray capable of holding the plurality of slides;

a rack capable of holding a plurality of reagent containers, each of said
5 containers holding a volume of a reagent and having associated therewith a two-dimensional data storage element containing encoded reagent information;

a robotic delivery system including a selectively and controllably movable probe capable of being positioned proximate selected ones of said reagent
containers for withdrawing a reagent volume from said reagent containers and
10 depositing the reagent volume on the slides according to a staining protocol, said robotic delivery system having an optical reader movable with said probe capable of reading said two-dimensional data storage element; and

a control system programmable for conducting said staining protocol, said control system operatively coupled to said robotic delivery system for
15 controlling said probe and operatively coupled to said optical reader for retrieving said reagent information read by said optical reader from said two-dimensional data storage elements for use in programming said staining protocol.

16. The apparatus of claim 15 wherein said control system includes a stat function operable for adding stat slides to said tray for staining .

17. The apparatus of claim 15 wherein said control system includes a touchscreen display connected in electrical communication with said control system, said touchscreen display operable for displaying information provided by said control system and for inputting information to said control system.

18. The apparatus of claim 15 wherein said two-dimensional data storage element includes an array of optically readable marks.

19. The apparatus of claim 15 wherein said data storage element is a two-dimensional bar code.

20. An apparatus for staining specimens carried on a plurality of slides, comprising:

a tray capable of holding the plurality of slides;

a rack capable of holding a plurality of reagent containers, each of said
5 containers holding a volume of a reagent;

a robotic delivery system including a selectively movable probe capable
of withdrawing reagent volumes from said selected reagent containers and
depositing the reagent volumes on selected slides according to a
predetermined staining protocol; and

10 a control system operatively coupled to said robotic delivery system for
controlling said probe; and

a chassis having a processing space and a first drawer supporting said
tray, said first drawer having a first position in which said tray is positioned in
said processing space for staining specimens on the slides and a second
15 position in which said tray is positioned outside of said processing space for
accessing the slides in said tray.

21. The apparatus of claim 20 wherein said chassis further includes a second drawer supporting said reagent rack, said second drawer having a third position in which said reagent rack is positioned in said processing space and a fourth position in which said reagent rack located outside of the processing space for one of adding reagents to said reagent container and adding reagent containers to the reagent rack.

22. The apparatus of claim 21 wherein said rack is removably positioned within said second drawer.

23. The apparatus of claim 21 further comprising a cover movable relative to said chassis between a closed condition for enclosing said processing space and an open condition, said cover remaining in said closed condition when said first drawer is moved between said first and said second positions and said second drawer is moved between said third and said fourth positions.

24. The apparatus of claim 20 further comprising a cover movable relative to said chassis between a closed condition for enclosing said processing space and an open condition, said cover remaining in said closed condition when said first drawer is moved between said first and said second positions.

25. The apparatus of claim 20 wherein said tray is removably positioned within said first drawer.

26. A method of operating an autostainer for staining a tissue specimen according to a staining protocol, comprising:

providing a reagent container with a two-dimensional data storage element containing encoded reagent information;

5 reading said two-dimensional data storage element to interpret the reagent information;

specifying the staining protocol for the tissue specimen using the reagent information; and

10 staining the tissue specimen on said specimen slide according to the staining protocol.

[illegible]

28. The method as claimed in claim 26 wherein said data storage element comprises a two-dimensional bar code and the step of reading includes using a reader operable to interpret the reagent information from the two-dimensional bar code.

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establishing a communications link between an autostainer control

generating a staining record on the autostainer control system, the

exporting the staining record from the autostainer control system

Year	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100
1960	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070	2071	2072	2073	2074	2075	2076	2077	2078	2079	2080	2081	2082	2083	2084	2085	2086	2087	2088	2089	2090	2091	2092	2093	2094	2095	2096	2097	2098	2099	2100

30. The method of claim 29 wherein the staining record includes patient information associated with the tissue specimen and the step of exporting further includes providing the patient information from the autostainer control system to the remote computer system.

31. The method of claim 29 further comprising staining the tissue specimen according to the staining protocol.

32. The method of claim 29 further comprising associating the exported staining record with a patient record on the remote computer system.

33. The method of claim 32 further comprising storing the staining record on the remote computer system.

34. A method for staining a tissue specimen in an autostainer, the method comprising:

providing a database having a staining protocol on a remote computer system;

5 establishing a communications link between an autostainer control system and the remote computer system; and

importing the staining protocol from the remote computer system to the autostainer control system over the communications link; and

10 staining the tissue specimen according to the imported staining protocol.

35. The method of claim 34 further comprising, before the step of staining, utilizing the imported staining protocol for programming the autostainer control system to execute a staining run.

36. The method of claim 34 further comprising storing the staining protocol for use by the autostainer control system.

37. The method of claim 34 further comprising:
importing patient information from the remote computer system;
and
associating the imported patient record with the staining protocol.